

# Attaching a Price to Greenhouse Gas Emissions with a Carbon Tax or Emissions Fee

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Significant debate continues about what, if any, policy initiatives may be appropriate or feasible to address greenhouse gas (GHG) emissions. Major scientific [assessments](#) in the United States and internationally conclude that “it is extremely likely that human activities, especially emissions of greenhouse gases, are the dominant cause of the observed warming since the mid-20<sup>th</sup> century.” Human-related GHG emissions, if continued, would tend to drive further warming, sea level rise, ocean acidification, and other impacts. Small future climate changes may bring benefits for some and adverse effects to others. Large climate changes would be increasingly adverse for a widening scope of populations and ecosystems.

Many nations and subnational governments (including U.S. state and local governments) have begun to address the risks of GHG-induced climate change by enacting GHG emission abatement programs. In the United States, combustion of fossil fuels (coal, oil, gas) released 76% of U.S. GHG emissions in 2016. Over 99% of the combustion emissions are carbon dioxide (CO<sub>2</sub>), the principal human-related GHG.

Congressional interest in legislation that would establish a market-based approach (e.g., cap-and-trade or carbon price proposals) to address GHG emissions has fluctuated over the last decade. In the 115<sup>th</sup> Congress, Members have introduced at least eight bills that would attach a price to GHG emissions.

The Supreme Court ruled in 2007 that the U.S. Environmental Protection Agency (EPA) has authority under the Clean Air Act to regulate GHG as pollutants. Pursuant to that authority, EPA issued regulations addressing GHG emissions from power plants and mobile sources. A number of U.S. states have taken action that establishes a price on GHG emissions. The most advanced actions have come from the Regional Greenhouse Gas Initiative (RGGI)—a coalition of nine states from the Northeast and Mid-Atlantic regions—and California. RGGI is a cap-and-trade system that took effect in 2009 that applies to CO<sub>2</sub> emissions from electric power plants. In 2013, California established an “economy-wide” cap-and-trade program that covers approximately 85% of California’s GHG emissions.

Some in Congress have proposed to establish a market-based system that would attach a price (e.g., tax or fee) to the emissions or the carbon content of the fuels that create them—particularly fossil fuels: coal, natural gas, and petroleum. Economic modeling indicates that a carbon price approach could achieve emission reductions, the level of which would depend on the scope and stringency (i.e., tax or fee level) of the program. For example, to address emissions from fossil fuel combustion, policymakers could apply

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a tax/fee to fossil fuels at approximately 3,000 entities, including coal mines, petroleum refineries, and entities required to report natural gas deliveries.

If policymakers decide to establish a carbon tax or fee, one of the more challenging questions would be how, to whom, and for what purpose should the new tax or fee revenues be applied. Depending on the level of the tax or fee, some economic analyses indicate that the distribution of tax or fee revenue could have more of an economic impact than the direct impacts from the tax or fee itself. When deciding how to allocate the revenues, policymakers would likely encounter trade-offs: minimizing economy-wide costs, lessening the projected costs borne by specific groups (for example, low-income households), and supporting a range of specific policy objectives—such as transition assistance for workers in specific industries, technology development, and climate change adaptation, among others.

Different fossil fuels produce different amounts of CO<sub>2</sub> emissions per unit of energy. The CO<sub>2</sub> emission intensity of electricity from natural gas combined cycle units, for example, is about 50% less than coal-fired units with the same power output. Such differences would lead to different tax rates per unit of energy across different fuels. Carbon prices would affect fuel prices in complex ways. Actual price increases would depend on multiple factors.

One expected effect of a carbon price is innovation in less carbon-intensive technologies and investment in lower-emissions technologies, such as nuclear, wind, or solar power, or energy efficiency. Economic modelers have projected how carbon prices would impact energy use, particularly the consumption of different fossil fuels and less carbon-intensive alternatives.

A primary argument against a carbon price is the concern about the costs the carbon price would impose. Costs associated with a carbon price system may be evaluated in terms of economy-wide measures, such as gross domestic product (GDP) impacts or effects on particular industries or specific demographic groups.

A tax or fee on GHG emissions or their inputs would lead to increased fossil fuel prices, which could have economy-wide impacts. The magnitude of the economic impacts from a carbon price system has been a subject of debate among policymakers and stakeholders. Ultimately, the economic effects would depend on a number of factors, including, but not limited to, the magnitude, design, and use of revenues of the carbon tax or fee. Multiple economic studies have estimated the economy-wide impacts (in terms of GDP and other measures) of various carbon price scenarios. Most economic literature finds that carbon prices could reduce GDP growth rates, depending on the price, and that using revenues to reduce existing distortionary tax decreases the economy-wide costs but may not eliminate them entirely. Some studies cite particular economic modeling scenarios in which a carbon price and revenue recycling would increase GDP growth rates compared to a baseline scenario.

In addition, economic studies generally conclude that lower-income households would likely face a disproportionate impact if some portion of the revenues were not recycled back to provide them meaningful benefits. Workers in fossil fuel industries (e.g., coal production) or carbon-intensive, trade-exposed industries could experience a disproportionate impact from a U.S. carbon price program. All of the carbon price proposals introduced in the 115<sup>th</sup> Congress would distribute some portion of the revenue stream to alleviate the expected impacts to one or more of these groups or establish [border adjustments](#) to address concerns from carbon-intensive, trade-exposed industries.

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